SECTION VII.—WEATHER AND DATA FOR THE MONTH.

THE WEATHER OF OCTOBER, 1917.

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PRESSURE AND WINDS.

The distribution of the mean atmospheric pressure over the United States and Canada, and the prevailing direction of the winds for October, 1917, are graphically shown on Chart VII (XLV—101), while the means at the several stations, with the departures from the normal, are shown in Tables I and III.

October, 1917, opened with relatively high pressure in the Central Valleys, but it was below normal in the northeastern districts and in the northern portion of the Rocky Mountains and Plains States; elsewhere it was generally near the seasonal average.

During the first half of the month the pressure was, as a rule, below the normal in most of the northern sections, while in the central and southern districts it was relatively higher than the average during the greater part of this period. About the middle of the month lower pressure overspread most sections, but in a few days there was a return to higher readings, and while a number of rather extensive low and high pressure areas moved across the country at intervals during the remainder of the month, the pressure generally averaged above the normal throughout the southern districts, the Great Plains States, and to the westward. In the northern States from the Mississippi Valley eastward it was below the seasonal average. The month closed with pressure above normal in all districts except the Lakes Region and to the eastward where it was slightly below the average.

For October, as a whole, the barometric pressure averaged above the normal in all sections of the country, except the Lakes Region, the Ohio, and upper and middle Mississippi valleys, and portions of the Middle Atlantic States, where it was below the seasonal average. The departures were generally not large, although in the North Pacific States they ranged from +0.10 to +0.20 inch.

The distribution of the HIGHS and LOWS resulted in prevailing southerly winds in most of New England, the lower Lakes Region, in Texas and portions of adjacent States. Westerly and northwesterly winds were frequent in the upper Lakes Region, the upper Mississippi and the Missouri valleys, while in the South Atlantic and East Gulf States the prevailing direction was northerly. Elsewhere variable winds prevailed.

TEMPERATURE.

The first decade of October was cool in most eastern districts, with marked temperature departures from the normal in the Lakes Region and the upper Mississippi Valley. In the Western States hot weather prevailed, especially in the interior of California, in Oregon, and the Plateau Region. Killing frosts occurred during the latter part of this period over most of the Ohio Valley, Nebraska, Iowa, Illinois, Missouri, and Kansas, and parts of States farther south, being at a few points one of the earliest killing frosts on record. (See p. 504–506.)

During the second decade the temperature averaged above normal west of the Rocky Mountains and close to normal in the southern half of the Plains Region; but in the Missouri Valley and eastern half of the country the period was colder than usual, especially from the Dakotas to Michigan. The temperature during the last 11 days of October averaged above normal in the Pacific States and about normal in the Plateau and New England States. Elsewhere the period was considerably colder than usual, the deficiency in temperature averaging about 10 degrees in the Middle Plains, the Central Valleys and western Lakes Region. Killing frost during the latter part of the month reached almost all interior points of Texas, being the earliest on record at many points in that State. From Idaho and Wyoming to Texas and in the Ohio and Missississpi valleys many stations at this time recorded the coldest weather ever known in October, and at a few points in the Atlantic States from Georgia to New Jersey new low temperature records for the month were made.

In the Ohio, the middle and upper Mississippi valleys, and the Lakes Region the temperature for October, 1917, as a whole, averaged from 6 to 9 degrees below the normal, which classes this as the coldest October of record in those districts. Elsewhere from the Rocky Mountains eastward, the month was likewise colder than usual, but the deficiencies were smaller. West of the Rockies the month was warmer than the seasonal average, especially in portions of California, where the positive departures were 6 degrees or more. In portions of the Ohio Valley October was the seventh successive month that the average temperature had been below the normal. This condition thus covered practically the entire growing season of the present year. In the far southwestern districts some high temperatures occurred during the month, the highest of record for October at a regular reporting station being 112° at Needles, Cal., while half the reporting stations in that State had temperatures of 100° or higher. On the other hand, temperatures below 0°F. were experienced in portions of the northern Rocky Mountains district, the lowest reported being −12° at Sheridan, Wyo., on the 29th. Freezing temperature occurred throughout the entire country, except along the eastern, southern, and western borders.

PRECIPITATION.

The first decade of October, 1917, was generally dry over most of the country, except that some rain fell in the Middle and North Atlantic States, the Ohio and lower Mississippi valleys, and the Lakes Region. During the next few days there was some precipitation in the Ohio and upper Mississippi valleys, the Lakes Region, and the northeast, and during the latter half of the second decade light rains occurred in the Missouri Valley and Plains States with liberal amounts in the Mississippi Valley and eastward. Early in the third decade rain fell in the Lakes Region, the Ohio Valley, and the Atlantic States north of Virginia; during the remainder of the month stormy weather and widespread precipitation prevailed much of the time in the upper Mississippi and lower Missouri valleys and eastward. Amounts were large in portions of the Atlantic States from North Carolina to Maine.

During the last few days of the month snow occurred in portions of the Rocky Mountains States, the Lakes Region, and in the northern Appalachian Mountains; some localities in the last-named district received as much as 12 inches or more. The month closed with generally fair weather throughout the country, except in the Lakes Region and extreme northeastern districts, where occasional light rain or snow prevailed.

For the month as a whole the precipitation was ample to excessive in the northeastern quarter of the country, but was scanty in almost all parts of the Cotton States, and from the Great Plains westward. In practically all of the western Plateau districts and California the month was rainless, which was also the case in portions of the southern Plains and over much of Texas. Along the northern Pacific coast where 6 to 10 inches of rain normally occur in October, only limited areas received as much as 1 inch.

RELATIVE HUMIDITY.

The relative humidity for the month as a whole was above the normal in the northern part of the country, except at points in the Dakotas and generally in the northern Rocky Mountain and Plateau regions, where it was below the average. Elsewhere, the atmosphere was relatively drier than the October average, particularly in the central and southern Plains States, and the central Plateau region, and to the westward, where the averages ranged from 10 to 20 per cent below the normal.

GENERAL SUMMARY.

The weather for October as a whole was unfavorable from an agricultural point of view. The maturing of late crops was checked in central and northeastern districts by low temperature during the first part of the month, and before the close freezing weather occurred nearly to the Gulf and south Atlantic coasts, doing considerable damage to winter truck crops and other vegetation. Dry weather prevented preparations for the seeding of winter grains or delayed the germination of the seed in much of the southwestern and western parts of the country, and cloudy, rainy weather from the Ohio Valley northeastward, interfered with the proper drying of corn in the shock. Conditions were favorable for outdoor work in much of the South and Southwest, but unfavorable in the Northeast. Cotton in some localities was injured by the low temperature and frost; potatoes were damaged to some extent in the northern and central parts of the country and in the Rocky Mountains Region. Pastures and ranges had insufficient moisture in many sections, and feed and water were so scarce on the southwestern ranges that stock was shipped to more favorable localities. The weather was generally favorable for fruits, although some apples were damaged by freezing in the Rocky Mountains Region.

SEVERE LOCAL STORMS.

The following notes of severe local storms during October, 1917, have been extracted from reports by officials of the Weather Bureau:

Missouri.—About 7 p. m., October 28, a tornado occurred at the head of Clear Creek, about 10 miles west of Springfield. It moved northward along a path about one-half mile wide and 18 miles long, demolishing houses, barns, and outbuildings, killing stock and destroying trees. Estimated damage, $20,000.

Average accumulated departures for October, 1917.

Districts.	Temperature.			Precipitation.			Cloudiness.		Relative humidity.	
	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure from the normal.	General mean for the current month.	Departure from the normal.
	°F.	°F.	°F.	In.	In.	In.	0–10		P. ct.	
New England	48.5	−1.8	−13.6	4.83	+1.20	−0.30	5.7	+0.3	81	+3
Middle Atlantic	51.6	−4.1	−10.9	5.00	+1.80	−1.30	4.9	+0.2	75	−1
South Atlantic	60.5	−3.2	+0.1	1.43	−2.60	−8.90	3.2	−0.8	75	−2
Florida Peninsula	76.5	0.0	+2.8	3.28	−3.00	−8.10	5.8	+1.2	78	−1
East Gulf	60.7	−4.6	−1.4	0.99	−1.80	−4.00	2.4	−1.4	69	−4
West Gulf	63.5	−3.1	+0.5	0.88	−1.90	−11.80	2.4	−1.3	62	−10
Ohio Valley and Tennessee	50.4	−6.2	−18.8	3.12	+0.60	+2.50	5.5	+1.1	70	−2
Lower Lakes	45.4	−6.4	−26.8	5.54	+2.60	+2.30	7.6	+1.8	76	+2
Upper Lakes	40.3	−7.3	−32.5	3.60	+0.80	−2.30	7.9	+1.9	79	+1
North Dakota	35.3	−7.0	−20.9	0.82	−0.40	−8.60	6.4	+1.2	74	+2
Upper Mississippi Valley	44.4	−8.4	−28.1	1.95	−0.50	−1.90	6.6	+2.1	70	−3
Missouri Valley	46.0	−6.7	−14.9	0.54	−1.40	−4.60	4.8	+0.7	60	−6
Northern Slope	43.1	−1.3	−18.9	0.56	−0.40	−1.40	5.1	+0.8	64	0
Middle Slope	51.3	−4.3	−9.1	0.40	−1.10	−6.40	3.6	+0.1	53	−8
Southern Slope	61.3	−1.1	+3.9	0.12	−2.00	−7.20	1.9	−1.8	42	−22
Southern Plateau	62.8	+2.9	−5.0	0.05	−0.60	−2.10	1.0	−1.2	41	−3
Middle Plateau	53.2	+2.4	−24.6	T.	−0.80	−2.30	1.6	−1.7	35	−15
Northern Plateau	52.0	+2.6	−12.6	0.03	−1.20	−1.90	5.7	+1.1	60	−1
North Pacific	53.5	+1.8	−7.6	1.00	−2.90	−8.60	5.7	−0.7	60	−23
Middle Pacific	63.0	+4.3	−1.5	0.00	−1.60	−8.00	3.4	−0.4	54	−13
South Pacific	66.5	+4.2	+6.7	0.06	−0.80	−3.30	3.2	+0.1	64	−3

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WEATHER CONDITIONS OVER THE NORTH ATLANTIC OCEAN DURING OCTOBER, 1916.

The data presented are for October, 1916, and comparison and study of the same should be in connection with those appearing in the REVIEW for the month.

Chart IX (XLV—102) shows for October, 1916, the averages of pressure, temperature, and prevailing direction of the wind at 7 a. m. 75th meridian time (Greenwich mean noon). Notes on the locations and courses of the more severe storms of the month are included in the following general summary.

PRESSURE.

The mean atmospheric pressure for the month was unusual in some respects. The Azores or North Atlantic HIGH, with a crest of 30.25 in., was practically normal in position, while the Icelandic LOW, with a minimum reading of 29.55 in. was considerably south of its usual location. The intensity of both these areas was greater than ordinary, and the steep gradient between them was responsible for the frequency of gales within the intermediate territory.

The most remarkable feature, was the unusually low pressure that prevailed in West Indies waters during the month, due to the comparatively large number of West Indies hurricanes that passed over that region. The point of average lowest pressure was located to the southward of Cuba, where the average pressure for the month was about 29.80 inches. The variations in pressure from day to day were not remarkably large, and the means for the three decades of the month differed somewhat less than usual, as shown by the following table that gives for a number of selected 5-degree squares the average pressure for each of the three decades, as well as the highest and lowest individual readings reported during the month within the respective squares: